

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)
)
Wireless E911 Location Accuracy Requirements) PS Docket No. 07-114
)
)

COMMENTS OF CTIA - THE WIRELESS ASSOCIATION®

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I. INTRODUCTION AND SUMMARY

CTIA—The Wireless Association® (“CTIA”) hereby responds to the Public Safety and Homeland Security Bureau’s Public Notice inviting comments in advance of its October 2nd workshop on E911 Phase II Location Accuracy.¹ Wireless carriers take their commitment to public safety seriously. Carriers have a long history of improving public safety communications, developing and deploying E911 solutions, and working with Public Safety Answering Points (“PSAPs”) and public safety officials to improve the safety of consumers. In these comments, CTIA makes the following points:

- In response to claims raised by the California chapter of the National Emergency Number Association (“CALNENA”), it is important to note that wireless carriers deliver Phase II location information in compliance with Commission rules and policies, and PSAPs are responsible for retrieving that data (whether through an initial bid or re-bid as set forth in PSAP best practices).
- The work of the Communications Security, Reliability, and Interoperability Council (“CSRIC”), including the results of a recent multi-vendor Indoor Location Test Bed, must be considered in any discussion of indoor location accuracy. That report makes clear that additional developments are necessary in order to provide actionable

¹ Public Notice, *Public Safety and Homeland Security Bureau Announces Workshop on E911 Phase II Location Accuracy*, PS Docket No. 07-114, DA 13-1873 (rel. Sept. 9, 2013) (“*Public Notice*”).

location information to public safety. CSRIC has already launched the next phase of its Test Bed initiative, and the FCC should support widespread participation – including by all interested vendors – to enable side-by-side comparisons and verifiable data.

II. WIRELESS CARRIERS MAKE PHASE II LOCATION INFORMATION AVAILABLE IN COMPLIANCE WITH FCC POLICIES, BUT PSAPS MUST RETRIEVE THAT DATA FOR PHASE II TO BE EFFECTIVE

Wireless carriers were surprised to learn of CALNENA’s August filing,² and they responded to the claims immediately. Carriers initiated their own reviews and analyses, reached out to CALNENA, and ultimately arrived at the same conclusion: CALNENA’s report offers a distorted view of Phase II location information delivery because the PSAPs likely failed to use the re-bid process identified in PSAP best practices to retrieve the Phase II information.

A. Wireless Carriers Deliver Phase II Location Information in Accordance With FCC Policies and Technical Standards

Wireless carriers responding to CALNENA’s filing have already explained that their delivery of Phase II location information complies with FCC policies, even where Phase II information is not immediately accessible but is delivered consistent with technical standards within 30 seconds.³ In short, although Section 20.18 does not expressly address the location information handoff, Commission precedent is clear: a wireless carrier must deliver Phase II

² Letter from Danita L. Crombach, ENP, The California of the National Emergency Number Association, to The Honorable Mignon Clyburn, Chairwoman, Federal Communications Commission (filed Aug. 12, 2013) (“CALNENA Letter”).

³ See generally AT&T Response to CALNENA Letter, at 2 (Sept. 6, 2013) (“AT&T Response”), attached as Attachment B to Notice of Ex Parte Communication of AT&T Services, Inc., PS Docket No. 07-114 (filed Sept. 9, 2013); Notice of Ex Parte Presentation of T-Mobile USA, Inc., PS Docket No. 07-114, at 2 (filed Sept. 5, 2013) (“T-Mobile Response”); Letter from Nneka Ezenwe Chiazor, Executive Director, Federal Regulatory, Verizon, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07-114, at 2 (filed Sept. 11, 2013) (“Verizon Wireless Response”). CALNENA raised questions of wireless carrier compliance with the E911 rules. See CALNENA Letter at 2 (“Of the 87,000 wireless 9-1-1 calls we received over the past 18 months, over one-half did not have Phase II location information delivered with the call *as required by FCC regulations.*”) (emphasis added).

location information to a designated point, and the PSAP is responsible for retrieving the information by making a query or bid via the Automatic Location Information (“ALI”) database. If the Phase II information is not available upon the initial bid – and in many instances the Phase II location information will not be – the carrier continues to derive the information and deliver it in accordance with Commission guidance and technical standards. Determining a caller’s location in a mobile environment is difficult, and wireless carriers have expended significant resources to deploy innovative technologies into their networks and devices to provide accurate and reliable location information. Certain location fixes, such as a pure GPS-based location fix, may be available as of the initial bid. Other types of accurate location fixes take more time to acquire and deliver, and therefore may not be available during an initial bid. In such cases, PSAP best practices provide that the PSAP should perform a re-bid.

As AT&T observed, “Phase II location information is not *pushed* by wireless carriers all the way to the PSAP.”⁴ Indeed, the Commission does not require it to be. Commission decisions “establish a specific demarcation point between wireless carrier and PSAP responsibilities.”⁵ The PSAP is then required to make a “query ... at the appropriate time to acquire the Phase II latitude/longitude data.”⁶

⁴ AT&T Response at 2 (emphasis in original).

⁵ Letter from Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau, to Kathleen B. Levitz, BellSouth Corp., Luisa Lancetti, Sprint PCS, and John T. Scott, III, Verizon Wireless, CC Docket No. 94-102, at 3 (WTB rel. Oct. 29, 2002) (“*October 2012 WTB Letter*”) (referencing Letter from Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau, to Marlys Davis, King County E911 Program Office, CC Docket No. 94-102, at 4 (WTB rel. May 7, 2001), *aff’d on recon. Revision of the Commission’s Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Request of King County, Washington*, Order on Reconsideration, 17 FCC Rcd 14789 ¶¶ 8-10 (2002) (affirming the Bureau letter and applying its rationale to Phase II E911 location)).

⁶ *Revision of the Commission’s Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Petition of City of Richardson, Texas*, Order, 16 FCC Rcd 18982 ¶ 17 (2001); *see also October 2012 WTB Letter* at 2 (“The E2 interface, the focus of the dispute, is used to

The FCC’s OET Bulletin No. 71, which provides guidelines for location accuracy testing, recognizes that location information will not always be available at the time of the initial bid, and delivery of Phase II location information may take up to 30 seconds. OET Bulletin No. 71 provides that “[a]ny test protocol should identify the time to first fix (including fixes from Phase I or other location methods), which will be used to route calls to the proper PSAP, and should also employ a reasonable time limit for tests of location accuracy. An acceptable time limit for such testing is *30 seconds after the call is sent.*”⁷ Wireless carriers that make Phase II location information available within 30 seconds after the call thus provide such information in a manner consistent with OET-71.

B. PSAP Best Practices Call for Re-Bids to Acquire Phase II Location Information if That Information Is Not Available in the Initial Bid

PSAP best practices recognize and account for the time needed to derive and deliver Phase II location information, and therefore provide for at least one re-bid. PSAPs generally perform the initial location bid to the ALI database at the same time that the voice portion of the call is delivered to the PSAP call taker. The wireless carrier may deliver Phase I location information at that time, as Phase II location information will likely not be available upon an initial bid. Accordingly, best practices call for re-bids about 30 seconds after the call is delivered.

- **NENA Doc. 57-501 § 3.2.8, Re-Bid/Location Updates:** “Once queried by the [Mobile Positioning Center], the [Positioning Determining Equipment] is allowed up to 30 seconds to provide a valid Phase II location. In most cases, with current technology, the PDE will not have responded with final Phase II location information to the MPC by the

send a query from the ALI database to a Mobile Positioning Center (MPC), typically maintained by the wireless carrier or a third party provider, requesting the transmission of location information back to the ALI database. This interface is a software upgrade to the ALI database; as such, costs associated with implementing the interface are the responsibility of the PSAP under the *King County* decisions.”).

⁷ OET Bulletin No. 71, at 4 (rel. Apr. 12, 2000) (emphasis added).

time the call is answered by the PSAP and initial ALI query to the MPC is performed. *This makes it necessary for the PSAP to be able to re-bid or re-request their ALI to receive the caller's location information or to receive updated location information.* This is currently necessary, because 9-1-1 calls are generally routed in 5 seconds or less and once the call is routed, it usually takes no more than 1 second for the initial ALI bid to be made. If an accurate latitude and longitude cannot be calculated in the 6 or less seconds it takes to route the call and make the initial ALI bid, then the wireless carrier will deliver Phase I type location data. In those cases, the PSAP will then need to re-bid or re-request the ALI approximately 15 to 30 seconds after they receive the initial ALI bid to obtain the 9-1-1 caller's accurate latitude and longitude.”⁸

- **APCO International Effective Practice Nos. 380743 & 380741:** “The [Authority Having Jurisdiction] should rebid all wireless calls when the wireless caller is not able to provide a location, even if the call is initially presented to the calltaker as a WPH2 [*i.e.*, Phase II].”⁹ “The AHJ should not rebid (automatically or manually) less than 30 seconds after the call is first presented to the calltaker. Any subsequent rebids should be at 30-second intervals. If automatic rebid is used, only the first rebid should be automatic.”¹⁰

These PSAP best practices recognize that the delivery of Phase II location information may take time after the initial bid. Therefore, they provide for re-bids to ensure that the Phase II location information delivered by carriers actually is received by PSAPs.

C. It Appears That CALNENA PSAPs May Not Be Performing Re-Bids for Many 911 Calls, Resulting in Distorted Findings Regarding Wireless Carrier Performance

In each of their reviews of the CALNENA claims, the wireless carriers concluded that they had delivered Phase II location information in compliance with the Commission's rules. And each wireless carrier reached the same conclusion that CALNENA measured PSAP's successful retrieval of Phase II location information from *initial bids*. The data do not account for re-bids, which, as noted above, are specifically identified in the PSAP best practices. AT&T,

⁸ NENA, *Wireless Phase I & II Features and Functions Operational Information Document*, Doc. 57-501 § 3.2.8 (Jan. 20, 2003) (emphasis added). The best practices also call for PSAPs to make manual mid-call location updates, rather than use automatic re-bids. *See id.*

⁹ APCO International, *An Assessment of the Value of Location Data Delivered to PSAPs with Enhanced Wireless 911 Calls*, Final Report, at 24 (Apr. 2007) (Effective Practice No. 380743).

¹⁰ *Id.* (Effective Practice No. 380741).

for example, noted that “[f]rom CALNENA’s vantage point, it is collecting data on location information *successfully retrieved by the PSAP* on 911 calls—a data point that can be impacted by various circumstances including whether PSAPs are timely requested a ‘rebid’ (*i.e.*, a refresh of the ALI database.”¹¹ In fact, data reviewed by T-Mobile and Verizon Wireless suggest that the five California PSAPs in the report *regularly did not perform re-bids*. T-Mobile found that the PSAPs did not re-bid for location on 79% of the 911 calls routed by T-Mobile.¹² Further, the San Francisco PSAP, the PSAP where CALNENA’s data showed the lowest numbers, did not re-bid location for 93% of 911 calls.¹³ Similarly, Verizon Wireless found that the five PSAPs performed a re-bid for less than half of all 911 calls, with the San Francisco PSAP performing the re-bid for less than 10% of 911 calls.¹⁴

CTIA and the wireless carriers have met with CALNENA and its contractor, Public Safety Network, since the filing. The parties agreed that further study of re-bid utilization by PSAPs should be pursued in the short-term and is in all parties’ interests to ensure that PSAPs retrieve Phase II location information.

III. CTIA SHARES THE GOAL OF RELIABLE AND ACCURATE INDOOR SOLUTIONS AND SUPPORTS CRITICAL NEXT STEPS TO ADVANCE TESTING METHODOLOGIES AND INDOOR SOLUTIONS

The *Public Notice* poses numerous questions about E911 indoor location – but makes no reference to the indoor location work recently conducted under the auspices of the Commission’s own federal advisory committee, the CSRIC. Specifically, CSRIC III’s E9-1-1 Location Accuracy Working Group 3, comprised of leading industry and public safety experts, issued two

¹¹ AT&T Response at 2 (emphasis in original).

¹² T-Mobile Response at 2.

¹³ *Id.*

¹⁴ Verizon Wireless Response at 3.

reports on indoor location during the past 16 months, including a March 2013 study reporting results from a multi-vendor Indoor Location Test Bed. As discussed below, although the results reflected progress, the Working Group found that additional developments are required to identify “actionable location” data for emergency responders.¹⁵

Any Commission consideration of indoor location should recognize CSRIC’s work and its findings thus far: more progress is needed before indoor location technologies can provide the data that public safety needs.¹⁶ Wireless carriers continue to work with other stakeholders to make this progress. Earlier this month, the newly chartered CSRIC IV’s NG9-1-1 Working Group 1 outlined the next steps in CSRIC’s E911 indoor location efforts. The upcoming workshop should promote participation – particularly among all interested vendors – in this next phase of Test Bed efforts.

A. The CSRIC III Working Group’s 2013 Test Bed Report Is a Significant Contribution to the Indoor Location Discussion But Also Recognizes Additional Developments Are Required

In the 2011 *Second Further Notice*, the Commission recognized the importance of indoor testing and the need for further work in the area, “refer[ing] the indoor testing issue to the CSRIC

¹⁵ CSRIC III E9-1-1 Location Accuracy Working Group 3, Indoor Location Test Bed Report, at 8 (Mar. 14, 2013) (“Test Bed Report”), *available at* http://transition.fcc.gov/bureaus/pshs/advisory/csric3/CSRIC_III_WG3_Report_March_%202013_ILTestBedReport.pdf.

¹⁶ Furthermore, indoor location information challenges are not limited to wireless services. These technical complexities also arise in the context of private branch exchanges and Multi Line Telephone Systems (MLTSs). Indeed, Congress recognized these challenges in the Next Generation 911 Advancement Act of 2012 (adopted as part of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96 (2012), Title VI, Subtitle E), directed the Commission to study “the feasibility of MLTSs to provide the precise location of a 911 caller, including any costs and technical issues that are associated with MLTSs offering E911 capabilities.” Public Safety and Homeland Security Bureau Seeks Comment on Multi-Line Telephone Systems Pursuant to the Next Generation 911 Advancement Act of 2012, Public Notice, 27 FCC Rcd 5329 (2012).

for further development of technical recommendations.”¹⁷ The Commission posed specific questions to the CSRIC III E9-1-1 Location Accuracy Working Group 3, which provided answers but ultimately found “a lack of independently verifiable data on location technology performance ... for indoor environments.”¹⁸ The report concluded that, “to be of any real value in providing the FCC and the industry as a whole with the information necessary to assist with informed decision making,” a test bed study would be necessary.¹⁹ It proposed a two stage approach: an evaluation of existing technologies by March 2013; and an assessment of emerging technologies as they mature and become available.

Working Group 3 then went to work, selecting an independent third party to perform the testing, establishing a funding mechanism for the test bed, identifying relevant morphologies for indoor locations (dense urban, urban, suburban, and rural) and representative building types (varied by size, construction method, and materials), and devising a test plan. The San Francisco Bay Area was chosen as the test bed area given the diverse morphologies present (San Francisco is used by multiple carriers to assess location technologies²⁰). The Working Group also solicited participation by location technology vendors: “[s]even different location vendors/technologies began the process to demonstrate their performance indoors through the common test bed, but

¹⁷ *Amending the Definition of Interconnected VoIP Service in Section 9.3 of the Commission's Rules; Wireless E911 Location Accuracy Requirements; E911 Requirements for IP-Enabled Service Providers*, Notice of Proposed Rulemaking, Third Report and Order, and Second Further Notice of Proposed Rulemaking, 25 FCC Rcd 10074 ¶ 88 (2011) (“*Second Further Notice*”).

¹⁸ Test Bed Report at 13.

¹⁹ *Id.*

²⁰ CSRIC III Working Group 3 E9-1-1 Location Accuracy, CSRIC III WG3 Final Report, at 59 (Mar. 14, 2013), *available at* http://www.fcc.gov/bureaus/pshs/advisory/csric3/CSRIC_III_WG3_Report_March_%202013_LeveragingLBS.pdf.

only three completed the process,”²¹ NextNav, Polaris Wireless, and Qualcomm. The four vendors that did not participate were TruePosition, CommScope, CSR, and Boeing BTL.²²

Just six months ago, in March 2013, the Working Group issued the Test Bed Report with results regarding yield, location accuracy, vertical error, time to find fix, and reported uncertainty, among other aspects. The Test Bed Report concluded that further development and testing is needed:

[E]ven the best location technologies tested have not proven the ability to consistently identify the specific building and floor, which represents the required performance to meet Public Safety's expressed needs. This is not likely to change over the next 12-24 months. Various technologies have projected improved performance in the future, but none of those claims have yet been proven through the test bed process. It is hoped that such technologies would be tested and validated in future test bed campaigns.²³

The Public Safety representatives serving on Working Group 3 added, “the results clearly indicate additional development is required to ensure the positional coordinates provided on an emergency caller sheltered indoors result in an ‘actionable location’ for emergency response, especially in urban and dense urban environments.”²⁴

The Test Bed Report went on to list desired location technology characteristics: (1) high accuracy and high yield; (2) low-latency; (3) commercially available; (4) standardized; (5) economically reasonable; (6) low impact on the handset and its development cycle; (7) independent (or largely so) from the wireless network; (8)

²¹ Test Bed Report at 54.

²² *Id.* at 55.

²³ *Id.* at 54-55.

²⁴ *Id.* at 8 (Public Safety Foreword).

efficient to deploy and operate; (9) available from multiple sources; and (10) unrestricted intellectual property (or fair/reasonable licensing).²⁵

The Test Bed Report noted that technologies continue to evolve and new ones emerge, and it recommended several cycles of testing to support the rate of location technology development.

B. The FCC Should Support Participation in the CSRIC IV Working Group Efforts to Advance Indoor Location Testing and Solutions

During the CSRIC IV meeting on September 12, 2013, Working Group 1 announced it will assess how to establish a permanent entity to manage a public indoor location test bed “that can provide the FCC with regular comprehensive, unbiased and actionable data on the efficacy of location technologies.”²⁶

The Commission should use the upcoming workshop to encourage vendors to engage in this CSRIC-led test bed platform. Widespread participation is critical to enable side-by-side evaluation of competing vendor’s claims. At the conclusion of the Test Bed Report, Working Group 3 invited “[v]endors and technologies that chose not to participate in the initial test bed, those who were not identified in time to participate, and other technologies of potential interest” to demonstrate their indoor performance capabilities in a future, CSRIC test bed.²⁷ Lesser approaches, such as vendor-led studies, invariably lead to discrepancies in testing parameters, unverifiable data, and/or reports that look more like marketing materials than objective analyses. TruePosition, for example, opted not to participate in the CSRIC San Francisco Test Bed and then went on

²⁵ *Id.* at 53-54.

²⁶ CSRIC IV, Working Group #1: NG9-1-1, Status Update, at 4 (Sept. 12, 2013).

²⁷ *Id.* at 55.

to conduct its own test in Wilmington, Delaware in significantly more limited conditions.²⁸

At this stage, calls from vendors to extend E911 rules to indoor locations lack a sound technological or public policy basis. The Test Bed Report's findings that current technology solutions lack the performance capabilities required by public safety demands further testing. For indoor location vendors, the proper course of action is to participate in the next phase of the CSRIC-led Test Bed, generate further verifiable data, and seek to meet the characteristics described above.

²⁸ See Comments of True Position, Docket No. 11-117 *et al.*, at 18-19 (filed Aug. 6, 2013) (acknowledging a "significant difference between CSRIC's Bay Area testing and TruePosition's Wilmington testing was that only Urban and Suburban environments were tested in Wilmington.... [N]either Dense Urban nor Rural environments were included in the Wilmington testing.").

IV. CONCLUSION

Wireless carriers are committed to continuing to improve the safety of consumers. Carriers will continue to work with PSAPs to ensure that the Phase II location information they deliver is retrieved by the PSAPs. CTIA also encourages all interested vendors to participate in the next phase of CSRIC's Test Bed initiative to further test and develop technologies so that actionable indoor location information will become available to public safety.

Respectfully submitted,

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